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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,369	12/03/2003	Hisashi Suganuma	107156-00214	3125

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EXAMINER	
CHAN, RICHARD	
ART UNIT	**PAPER NUMBER**
2618	

MAIL DATE	DELIVERY MODE
06/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/725,369	SUGANUMA, HISASHI	
	Examiner	Art Unit	
	Richard Chan	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see page 4, filed 3/15/07, with respect to the rejection(s) of claim(s) 1-6, and 10 under 35 U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Hirohashi (US 4,574,390).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niimi (US 4,587,620) in view of Hirohashi (US 4,574,390).

With respect to claim 1, Niimi discloses the noise eliminator for eliminating noise contained in an input signal, comprising: a predictor 1 (Col.4 lines 20-29) for performing a predictive operation on output signals of said synthetic unit to calculate predictive values approximate to said input signal; and an interpolation control unit Fig.4 (Col.4 line 30- Col.6 lines 5) for determining an amount of change of said predictive values as said interpolation amount, and stopping said synthetic unit from performing the

synthesis of said interpolation amount when said predictive values are inappropriate with respect to said hold signal component output in said hold state, and making said synthetic unit perform the synthesis of said interpolation amount when said predictive values are appropriate, however Niimi does not specifically disclose wherein the noise eliminator further comprises a holding unit for detecting a period of occurrence of noise contained in said input signal, passing said input signal for output during a period when no noise occurs, and putting said input signal into a hold state for output during the period of occurrence of noise; a synthetic unit for synthesizing a hold signal component of the signal output from said holding unit with an interpolation amount, said hold signal component being output in said hold state;

The Hirohashi reference however discloses a holding unit 12 for detecting a period of noise occurrence contained in input signal, (Col.5 line 3-10) and (Col.6 line 44-62) and a synthetic unit 7 for synthesizing a hold signal component of the signal output from said holding unit 12 with an interpolation amount, said hold signal component being output in said hold state. (Col.5 line 55-Col.6 line 11)

It would have been obvious to one of ordinary skill in the art to implement the holding unit and synthetic unit for holding input RF signal and creating a replacement signal where noise occurs as disclosed by Hirohashi with the noise eliminator as disclosed by Niimi in order to replace noise affected portions of the input signal.

With respect to claim 2, Niimi and Hirohashi combined disclose the noise eliminator according to claim 1, Niimi continues to disclose wherein said interpolation

control unit determines, as the amount of change, a difference between said predictive value generated at the starting point of the period of occurrence of noise and each individual predictive value generated within the period of occurrence of noise. (Col.2 lines 65-Col.3 line 23)

With respect to claim 3, Niimi and Hirohashi combined disclose the noise eliminator according to claim 1, Niimi continues to disclose wherein said interpolation control unit determines an absolute value of said difference between said each predictive value determined within the period of occurrence of noise and said hold signal component output in said hold state and an absolute value of said hold signal component, and regards said predictive value as inappropriate with respect to said hold signal component when the absolute value of said difference is greatly different from the absolute value of said hold signal component. (Col.3 line 60- Col.4 line 10)

With respect to claim 4, Niimi and Hirohashi combined discloses the noise eliminator according to claim 1, Niimi continues to disclose wherein said interpolation control unit determines an absolute value of said difference between said each predictive value determined within the period of occurrence of noise and said hold signal component output in said hold state and an absolute value of said hold signal component, and regards said predictive value as appropriate when the absolute value of said difference is little different from the absolute value of said hold signal component. (Col.3 line 60- Col.4 line 10)

With respect to claim 5, Niimi and Hirohashi combined discloses the noise eliminator according to claim 3, Nimi continues to disclose wherein said interpolation control unit further determines a maximum value of the absolute values of said differences within a predetermined period and a maximum value of the absolute values of said hold signal component within said predetermined period as a first maximum value and a second maximum value, respectively, and regards said predictive values as inappropriate with respect to said hold signal component when said first maximum value is larger than said second maximum value. (Col.4 line 3-10)

With respect to claim 6, Niimi and Hirohashi combined discloses the noise eliminator according to claim 4, however Nimi continues to disclose wherein said interpolation control unit further determines a maximum value of the absolute values of said differences within a predetermined period and a maximum value of the absolute values of said hold signal component within said predetermined period as a first maximum value and a second maximum value, respectively, and regards said predictive values as appropriate when said first maximum value is smaller than or equal to said second maximum value. (Col.4 line 3-10)

With respect to claim 10, Niimi discloses the noise elimination method for eliminating noise contained in an input signal, comprising a predictive step of performing a predictive operation on output signals generated in the synthetic step to calculate

predictive values approximate to said input signal; (Col.4 lines 20-29) and an interpolation control step of determining an amount of change of said predictive values as said interpolation amount, and stopping the synthesis of said interpolation amount in the synthetic step when said predictive values are inappropriate with respect to said hold signal component output in said hold state, and enabling the synthesis of said interpolation amount in the synthetic step when said predictive values are appropriate; (Col.4 line 30- Col.6 lines 5), however Niimi does not disclose a holding step of detecting a period of occurrence of noise contained in said input signal, passing said input signal for output during a period when no noise occurs, and putting said input signal into a hold state for output during the period of occurrence of noise; a synthetic step of synthesizing a hold signal component of the signal output in the holding step with an interpolation amount, said hold signal component being output in said hold state.

The Hirohashi reference however discloses a holding step implemented by holding unit 12 of detecting a period of occurrence of noise contained in said input signal, passing said input signal for output during a period when no noise occurs, and putting said input signal into a hold state for output during the period of occurrence of noise; (Col.5 line 3-10) and (Col.6 line 44-62) a synthetic step through 17 of synthesizing a hold signal component of the signal output in the holding step with an interpolation amount, said hold signal component being output in said hold state. (Col.5 line 55-Col.6 line 11)

It would have been obvious to one of ordinary skill in the art to implement the holding unit and synthetic unit for holding input RF signal and creating a replacement signal where noise occurs as disclosed by Hirohashi with the noise eliminator as disclosed by Niimi in order to replace noise affected portions of the input signal.

4. Claims 7-9 are rejected as being rejected under 35 U.S.C. 103(a) as being unpatentable over Niimi (US 4,587,620) in view of Hirohashi (US 4,574,390) and in further view of Honma (US 4,191851).

With respect to claim 7, Niishi and Hirohashi combined discloses the noise eliminator according to claim 1, however neither reference wherein said input signal is an FM detection signal.

The Honma reference however discloses the use of an FM detection signal for signal noise suppression. (Col.1 line 50- Col.2 line 30)

It would have been obvious to one of ordinary skill in the art to implement the use of an FM detection signal for noise suppression as disclosed by Honma with the noise elimination device as disclosed by Niimi and Peace combined in order to use the noise elimination circuitry within the FM environment.

With respect to claim 8, Niishi, Hirohashi, and Honma combined disclose the noise eliminator according to claim 7, Honma continues to disclose wherein said predictor performs a predictive operation for approximating one of a pilot signal and a

sub carrier contained in said FM detection signal. (Col.1 line 50- Col.2 line 30)

With respect to claim 9, Niishi, Hirohashi, and Honma combined disclose the noise eliminator according to claim 8, Honma continues to disclose wherein said predictor determines a difference between two of said output signals to calculate said predictive value, said two output signals having a phase difference corresponding to the frequency of said pilot signal or said sub carrier. (Col.7 lines 26-47)

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Chan whose telephone number is (571) 272-0570. The examiner can normally be reached on Mon - Fri (9AM - 5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571)272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Richard Chan
Art Division 2618
6/10/07

NAY MAUNG
SUPERVISORY PATENT EXAMINER